

Appl. No. : 09/421,870
Filed : October 26, 1999

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An optical disc, comprising:
a substrate having a patterned surface and an additional surface, said patterned surface contributing to an information layer of said disc; and
~~at least a plurality of one-micron-sized nonoperational~~chemically reactive structure
features disposed upon an air-incident surface of said disc comprising a material
~~physically deposited on or in the disc subsequent to manufacture, said at least one~~
~~nonoperational structure being readable concurrently with said operational structure, and~~
an operational structure wherein contained in the said information layer, said
~~includes an operational structure that is being~~ trackable by a laser of an optical disc drive
when said substrate patterned surface is presented closer to the laser than said substrate
additional surface;
wherein one or more of said plurality of chemically reactive features are disposed
to be readable concurrently with said operational structure.
2. (Currently Amended) The optical disc of claim 1, wherein said operational structure is trackably disposed as a forward image in positive relief.
3. (Currently Amended) The optical disc of claim 1, wherein said operational structure is trackably disposed in the plane of said information layer that is most distal to said substrate additional surface.
4. (Currently Amended) The optical disc of claim 1, wherein said operational structure is trackably disposed as a forward image in negative relief.
5. (Currently Amended) The optical disc of claim 1, wherein said operational structure is trackably disposed in the plane of said information layer that is most proximal to said substrate additional surface.
6. (Original) The optical disc of any one of claims 1-5, wherein said operational structure includes a wobble groove.

Claims 7-9. (Canceled)

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10. (Currently Amended) The optical disc of claim 1, wherein said plurality of nonoperationalchemically reactive features structure are—is disposed confocally with said operational structure.

Claims 11-12. (Canceled)

13. (Withdrawn) The optical disc of claim 1, wherein said nonoperational structure is an analyte-specific signal element.

14. (Withdrawn) The optical disc of claim 8, wherein said nonoperational structure is an analyte-specific signal element.

15. (Withdrawn) The optical disc of claim 9, wherein said nonoperational structure is an analyte-specific signal element.

16. (Withdrawn) The optical disc of claim 10, wherein said nonoperational structure is an analyte-specific signal element.

17. (Withdrawn) The optical disc of claim 11, wherein said nonoperational structure is an analyte-specific signal element.

18. (Withdrawn) The optical disc of claim 12, wherein said nonoperational structure is an analyte-specific signal element.

19. (Currently Amended) The optical disc of claim 10, wherein said information layer further includes a reflective layer, and wherein said plurality of nonoperationalchemically reactive features are structure—is disposed closer to the laser than said reflective layer when said substrate patterned surface is presented closer to the laser than said substrate additional surface.

20. (Currently Amended) The optical disc of claim 10, wherein said information layer further includes a reflective layer, and wherein said nonoperational structure is readably

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~~disposed on a disc surface more distant from said substrate additional surface than is said reflective layer.~~

21. (Currently Amended) The optical disc of either claim 19 or claim 20, wherein said plurality of nonoperationalchemically reactive structure features ~~is~~ are disposed upon ~~a~~ an air- incident surface of said reflective layer.

22. (Currently Amended) A trackable optical disc ~~having a readable nonoperational structure,~~ comprising:

an information layer having a structure trackable by a laser of an optical disc reader; and
at least one micron-sized nonoperationalchemically reactive feature structure disposed upon an air-incident surface of said disc comprising a material physically deposited on or in the disc subsequent to manufacture and included in said information layer, wherein said at least one nonoperationalchemically reactive structure feature is disposed confocally with said ~~and the said~~ trackable structure. ~~are concurrently readable by a single optical pickup.~~

23. (Canceled)

24. (Currently Amended) The optical disc of either claim 22 ~~or claim 23,~~ wherein said trackable structure includes a wobble groove.

25. (Withdrawn) The optical disc of claim 24, wherein said nonoperational structure is an analyte-specific signal element.

26. (Currently Amended) The optical disc of claim 22, wherein said information layer ~~includes comprises~~ a reflective layer, and wherein said at least one nonoperationalchemically reactive feature is structure ~~is disposed upon a surface of said reflective layer. closer to the laser than said reflective layer when said disc is presented for concurrent reading of said nonoperational and operational structures.~~

27. (Currently Amended) The optical disc of claim 22, said disc further comprising:

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a substrate, said substrate having a patterned surface and an additional surface; and
a reflective layer, wherein said at least one ~~nonoperational~~chemically reactive feature ~~is~~ structure is disposed closer to the laser than said reflective layer when said substrate patterned surface is presented closer to the laser than said substrate additional surface.

28. (Currently Amended) The optical disc of ~~claim 26 or claim 27~~, wherein said at least one ~~nonoperational~~chemically reactive structure ~~feature~~ is disposed upon a surface of said reflective layer.

29. (Currently Amended) The optical disc of either claim 1 or claim 22, wherein said at least one ~~nonoperational~~chemically reactive feature ~~structure~~ produces at least one discriminable signal during trackable reading of said disc.

30. (Previously Presented) The optical disc of claim 29, wherein said discriminable signal is an amplitude variation in the high frequency (HF) signal.

31. (Previously Presented) The optical disc of claim 29, wherein said discriminable signal is an amplitude variation in the tracking error (TE) signal.

32. (Previously Presented) The optical disc of claim 29, wherein said discriminable signal is an amplitude variation in the focus error (FE) signal.

33. (Currently Amended) The optical disc of claim 1 or claim 22, wherein the duration of at least one signal produced by said at least one ~~nonoperational~~chemically reactive feature ~~structure~~ during trackable reading of said disc provides a substantially quantitative measure of the size of said the ~~nonoperational~~chemically reactive feature ~~structure~~ in the direction of disc tracking.

34. (Currently Amended) The optical disc of claim 10 ~~or claim 23~~, wherein said plurality of ~~nonoperational~~chemically reactive features ~~structure~~ are is disposed readably upon the laser-proximal side of a light transmissible coating applied to the laser-proximal surface of said

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information layer, when said substrate patterned surface is presented closer to the laser than said substrate additional surface.

35. (Original) The optical disc of claim 22, wherein said trackable structure is a holographically-projected image.

36. (Currently Amended) The optical disc of claim 35, wherein said holographic image is projected in a plane confocal with said at least one nonoperationalchemically reactive feature structure.

37. (Original) The trackable optical disc of claim 35 or claim 36, wherein said projected tracking structure is an image of a wobble groove.

38. (Currently Amended) An optical disc assembly comprising ~~having readable nonoperational data;~~

an optical disc according to claim 1 or claim 22; and

a cover attached to said optical disc such that said cover rotates with the rotation of said optical disc, wherein said cover ~~further~~ focuses an incident laser on said disc's information layer.

39. (Currently Amended) The optical disc assembly of claim 38, wherein said cover is nonintegral to said disc and ~~attachable thereto~~.

40. (Original) The optical disc assembly of claim 39, wherein said cover is reversibly attached to said disc.

41. (Original) The optical disc assembly of claim 39, wherein said cover is moveably attached to said disc.

42. (Original) The optical disc assembly of claim 41, wherein said cover is hingeably attached to said disc.

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43. (Original) The optical disc assembly of claim 38, wherein said cover consists essentially of a material selected from the group consisting of plastic and glass.

44. (Original) The optical disc assembly of claim 43, wherein said cover consists essentially of plastic.

45. (Original) The optical disc assembly of claim 44, wherein said cover consists essentially of polystyrene.

46. (Original) The optical disc assembly of claim 44, wherein said cover consists essentially of polycarbonate.

47. (Original) The optical disc assembly of claim 38, wherein said assembly has a diameter in the radial plane between 110 - 130 mm and a depth between 1.1 - 1.3 mm.

48. (Currently Amended) The optical disc assembly of claim 38, wherein ~~said at least one nonoperationalchemically reactive feature structure~~ is disposed upon the disc-proximal side of said cover.

49. (Currently Amended) A multiple data layer optical disc ~~having a readable nonoperational structure~~, comprising:

a reflective layer;

an additional reflective layer; and

a plurality of nonoperationalchemically reactive features; ~~structure comprising a material physically deposited on or in the disc subsequent to manufacture,~~

wherein said reflective layer or said additional reflective layer has a structure trackable by an optical disc reader, and wherein one or more of said plurality of nonoperationalchemically reactive features ~~are structure~~ is disposed readably with said trackable structure.

50. (Currently Amended) The trackable optical disc of claim 49, wherein one or more of said plurality of nonoperationalchemically reactive features ~~structure~~ and said trackable structure are readable by the same optical pickup.

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51. (Previously Presented) The trackable optical disc of claim 49, wherein said additional reflective layer is semireflective.

52. (Currently Amended) The trackable optical disc of claim 51, wherein one or more of said plurality of nonoperationalchemically reactive features structure ~~are~~ is-disposed confocally with a surface of either said reflective layer or of said semireflective layer.

53. (Currently Amended) The trackable optical disc of claim 52, wherein one or more of said plurality of nonoperationalchemically reactive features structure ~~is~~ are disposed confocally with a surface of said semireflective layer.

54. (Currently Amended) The trackable optical disc of claim 53, wherein one or more of said plurality of nonoperationalchemically reactive features structure ~~are~~ is-disposed on the laser-distal side of said semireflective layer.

55. (Canceled)

56. (Currently Amended) The trackable optical disc of claim 49, wherein said plurality of nonoperationalchemically reactive features structure ~~are~~ is-disposed on the laser-proximal side of said reflective layer.

57. (Original) The trackable optical disc of claim 52, wherein said plurality of nonoperationalchemically reactive features structure ~~are~~ is-disposed between said reflective layer or of said semireflective layer.

58. (Original) The trackable optical disc of claim 49, wherein said trackable structure includes a wobble groove.

59. (Currently Amended) The trackable optical disc of claim 58, wherein said plurality of nonoperationalchemically reactive features structure ~~are~~ is-disposed confocally with said wobble groove.

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60. (Currently Amended) The trackable optical disc of claim 58, wherein said reflective layer and said semireflective layer are reversibly separable.

61. (Currently Amended) An optical disc system for detection of ~~nonoperational~~chemically reactive features ~~structures~~, comprising:
a trackable optical disc according to claim 1 or claim 22; and
an optical disc reader.

62. (Currently Amended) An optical disc system for detection of ~~nonoperational~~chemically reactive features ~~structures~~, comprising:
an optical disc assembly according to claim 38; and
an optical disc reader.

Claims 63-66. (Canceled)

67. (Currently Amended) A method for making a trackable optical disc having ~~concurrently a plurality of readable nonoperational~~chemically reactive structures~~features~~, the method comprising:

applying a reflective layer to the patterned surface of a disc substrate according to claim 1 or claim ~~[[4]]~~22; and

disposing a plurality of nonoperationalchemically reactive structure~~features~~ ~~comprising a material physically deposited on or in the disc subsequent to manufacture~~ confocally with, and ~~laser proximal to,~~ said trackable operational structure.

68. (Canceled)

69. (Original) The method of claim 67, wherein said trackable operational structure includes wobble groove.

70. (Currently Amended) A method of making a trackable optical disc assembly having readable ~~nonoperational~~chemically reactive feature data, comprising ~~the steps of:~~

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disposing a plurality of ~~nonoperational~~chemically reactive structure features comprising a ~~material disposed physically deposited on or in the disc subsequent to manufacture~~ on the disc-proximal side of a light transmissive cover; and

attaching said cover to an inverted optical disc according to claim 1 or claim 422.

71. (Currently Amended) A method of using an optical disc reader to read a ~~nonoperational~~chemically reactive structure feature of a disc, the method comprising trackably reading the optical disc of any one of claim 1 or claim 22 in said reader.

72. (Original) The method of claim 71, wherein said reading further includes detecting high frequency events in said reader's HF signal.

73. (Currently Amended) The method of claim 72, wherein said event duration reports dimensional information about at least one said ~~nonoperational~~chemically reactive feature~~structure~~.

74. (Original) The method of claim 72, wherein said disc includes a wobble groove.

Claims 75-77. (Canceled)

78. (Currently Amended) An optical disc comprising:
a substrate, said substrate having a patterned surface and an additional surface;
a plurality of ~~nonoperational~~chemically reactive structure features comprising a ~~material physically deposited on or in the disc subsequent to manufacture and disposed on an air incident surface on said disc, and disposed~~ confocally with said operational structure; and
an information layer,

wherein said information layer comprises an operational structure that is disposed in forward image positive relief when said substrate patterned surface is presented closer to a laser of an optical disc reader than said substrate additional surface.

79. (Currently Amended) An optical disc comprising:
a substrate, said substrate having a patterned surface and an additional surface;

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~~a plurality of nonoperationalchemically reactive features structures comprising a material physically deposited on or in the disc subsequent to manufacture and~~ disposed confocally with said operational structure; and

an information layer,

wherein said information layer comprises an operational structure that is disposed in forward image negative relief when said substrate patterned surface is presented closer to a laser of an optical disc reader than said substrate additional surface.

80. (Original) The optical disc of either claim 78 or claim 79, wherein said operational structure includes a wobble groove.

Claims 81-152. (Canceled).

153. (Withdrawn) An optical disc having a readable analyte structure, said disc comprising:

an information layer including a trackable structure that is followed by a read beam of an optical disc reader, said trackable structure implemented to produce a holographic image; and

at least one analyte structure, said trackable structure and said analyte structure being concurrently readable by a single optical pickup.

154. (Withdrawn) The optical disc according to claim 153 wherein said holographic image is projected in a plane confocal with said analyte structure.

155. (Withdrawn) The optical disc according to either claim 153 or 154 wherein said trackable structure is an image of a wobble groove.

156. (Currently Amended) An optical disc assembly, comprising:

an optical disc comprising:

an information layer;

~~a cover that assists in focusing an incident beam on said information layer;~~

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a substrate having a patterned surface and an additional surface, said patterned surface contributing to said information layer; and

an operational structure associated with said information layer, said operational structure trackable by an optical disc drive when said patterned surface of said substrate is presented closer to a laser of an optical disc reader than said additional surface of said substrate; and

at least one ~~nonoperational~~chemically reactive feature structure comprising a material physically deposited on or in the disc subsequent to manufacture and readable concurrently with said operational structure;

a cover removably attached to said optical disc, said cover assisting to focus an incident beam on said information layer.

157. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed as a forward image in positive relief.

158. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed in a plane of said information layer that is most distal to said additional surface of said substrate.

159. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed as a forward image in negative relief.

160. (Previously presented) The optical disc assembly according to claim 156 wherein said operational structure is trackably disposed in a plane of said information layer that is most proximal to said additional surface of said substrate.

161. (Previously presented) The optical disc assembly according to any one of claims 156, 157, 158, 159 or 160 wherein said operational structure includes a wobble groove.

162. (Withdrawn) The optical disc assembly according to claim 156 further including at least one analyte structure readable concurrently with said operational structure.

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163. (Withdrawn) The optical disc assembly according to any one of claims 157, 158, 159 or 160 further including at least one analyte structure readable concurrently with said operational structure.

164. (Withdrawn) The optical disc assembly according to claim 161 further including at least one analyte structure readable concurrently with said operational structure.

165. (Withdrawn) The optical disc assembly according to claim 162 wherein said analyte structure is disposed confocally with said operational structure.

166. (Withdrawn) The optical disc assembly according to claim 163 wherein said analyte structure is disposed confocally with said operational structure.

167. (Withdrawn) The optical disc assembly according to claim 164 wherein said analyte structure is disposed confocally with said operational structure.

168. (Withdrawn) The optical disc assembly according to claim 162 wherein said analyte structure is an analyte-specific signal element.

169. (Withdrawn) The optical disc assembly according to claim 163 wherein said analyte structure is an analyte-specific signal element.

170. (Withdrawn) The optical disc assembly according to claim 164 wherein said analyte structure is an analyte-specific signal element.

171. (Withdrawn) The optical disc assembly according to claim 165 wherein said analyte structure is an analyte-specific signal element.

172. (Withdrawn) The optical disc assembly according to claim 166 wherein said analyte structure is an analyte-specific signal element.

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173. (Withdrawn) The optical disc assembly according to claim 167 wherein said analyte structure is an analyte-specific signal element.

174. (Withdrawn) The optical disc assembly according to claim 165 wherein said information layer further includes a reflective layer, and said analyte structure is disposed laser-proximal to said reflective layer when said substrate patterned surface is presented laser-proximal to said additional surface of said substrate

175. (Withdrawn) The optical disc assembly according to claim 165 wherein said information layer further includes a reflective layer, and said analyte structure is readably disposed on a disc surface more distant from said substrate additional surface than is said reflective layer

176. (Withdrawn) The optical disc assembly according to either claim 174 or 175 wherein said non-operational structure is disposed upon a surface of said reflective layer.

177. (Withdrawn) An optical disc assembly having a readable analyte structure, said disc assembly comprising:

- an information layer having a structure trackable by an optical disc reader;
- a cover to assist in focusing an incident beam on said information layer; and
- at least one analyte structure, said trackable and analyte structures being concurrently readable by a single optical pickup.

178. (Currently Amended) The optical disc assembly according to either claim 156 or 177 wherein said cover is nonintegral to said disc and attachable thereto.

179. (Previously Presented) The optical disc assembly according to claim 178 wherein said cover is reversibly attached to said disc.

180. (Previously Presented) The optical disc assembly according to claim 178 wherein said cover is moveably attached to said disc.

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181. (Previously Presented) The optical disc assembly of claim 180 wherein said cover is hingeably attached to said disc.

182. (Currently Amended) The optical disc assembly according to ~~either~~ claim 156 or ~~177~~ wherein said cover consists essentially of a material selected from the group consisting of plastic and glass.

183. (Previously Presented) The optical disc assembly according to claim 182 wherein said cover consists essentially of plastic.

184. (Previously presented) The optical disc assembly according to claim 183 wherein said cover consists essentially of polystyrene.

185. (Previously Presented) The optical disc assembly according to claim 183 wherein said cover consists essentially of polycarbonate.

186. (Previously Presented) The optical disc assembly according to either claim 156 or 177 wherein said assembly has a diameter in a radial plane between 110 - 130 mm and a depth between 1.1 – 1.3 mm.

187. (Withdrawn) The optical disc assembly according to claim 156 or 177 wherein said analyte structure is disposed upon a disc-proximal side of said cover.

188. (Withdrawn) An optical disc having a readable analyte structure, said disc comprising:

- a first reflective layer;
- a second reflective layer;
- a analyte structure disposed on a predetermined side of said second reflective layer; and
- a trackable structure associated with at least one of said first and second reflective layers, said trackable structure configured to allow an incident beam of an optical disc reader to track therealong, and said analyte structure being disposed readably with said trackable structure.

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189. (Withdrawn) The optical disc according to claim 188 wherein said analyte structure and said trackable structure are readable by a single optical pickup.

190. (Withdrawn) The optical disc according to claim 188 wherein said second reflective surface is semireflective.

191. (Withdrawn) The optical disc according to claim 190 wherein said analyte structure is disposed confocally with a surface of either said first reflective layer or said semireflective layer.

192. (Withdrawn) The optical disc according to claim 190 wherein said analyte structure is disposed confocally with a surface of said semireflective layer.

193. (Withdrawn) The optical disc according to any one of claims 188, 189, 190, 191, or 192 wherein said analyte structure is disposed confocally with a surface of said first reflective layer.

194. (Withdrawn) The optical disc according to claim 193 wherein said analyte structure is disposed on a laser-proximal side of said first reflective layer.

195. (Withdrawn) The optical disc according to claim 193 wherein said analyte structure is disposed on a laser-distal side of said first reflective layer.

196. (Withdrawn) The optical disc according to any one of claims 190, 191, or 192 wherein said analyte structure is disposed between said first reflective layer and said semireflective layer.

197. (Withdrawn) The optical disc according to any one of claims 188, 189, 190, 191, or 192 wherein said trackable structure includes wobble groove.

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198. (Withdrawn) The optical disc according to claim 193 wherein said trackable structure includes wobble groove.

199. (Withdrawn) The optical disc according to claim 194 wherein said trackable structure includes wobble groove.

200. (Withdrawn) The optical disc according to claim 195 wherein said trackable structure includes wobble groove.

201. (Withdrawn) The optical disc according to claim 196 wherein said trackable structure includes wobble groove.

202. (Withdrawn) The optical disc according to claim 197 wherein said analyte structure is disposed confocally with said wobble groove.

203. (Withdrawn) The optical disc according to any one of claims 190, 191, or 192 wherein said reflective layer and semireflective layer are reversibly separable.

Claims 204 – 208. (Canceled)

209. (Withdrawn) A method for making a trackable optical disc having concurrently readable analyte structures, said method comprising the steps of:

applying a reflective layer to said patterned surface of a respective disc substrate according to any one of claims 156, 157, 158, 159, or 160; and
disposing a analyte structure confocally with said trackable operational structure.

210. (Withdrawn) The method according to claim 209 wherein said disposing step further includes disposing said analyte structure laser-proximal to said trackable operational structure.

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211. (Withdrawn) The method according to either claim 209 or 210 wherein said trackable operational structure includes a wobble groove.


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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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